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# ⑩ CA CANADIAN PATENT

⑥4 BOTTLE CARRYING CASE

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BOTTLE CARRYING CASE

ABSTRACT OF THE DISCLOSURE

Plastic carrying cases for bottles, especially beer bottles are constructed so that centre-to-centre distance between adjacent compartments in the plan view within the case and like cases abutting any side or end wall of the case is substantially equal. In addition, when the cases are stacked with bottles therein the tops of the bottles in one case engage the underside of the next upper case so that the load of the stack is supported through the bottles.

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This invention relates to a carrying case for bottles, more particularly to a carrying case for beverage bottles.

Cases for the transportation and storage of beverage bottles of many types and designs have been suggested. A variety of materials have been used in the construction of such cases, depending on the bottles concerned, such as, cardboard, wood, metal and synthetic polymeric materials.

The present invention is concerned with cases constructed of polymeric materials and particularly to cases utilized in the carrying of beer bottles, although the cases may be utilized for the transportation and storage of other beverage bottles.

The term "beer" is used in a broad sense in this specification to refer to alcoholic liquors obtained by the fermentation of malt or other saccharine substance and flavored by hops or other bittering agents, and hence includes lagers, ales, stouts and porters.

Beer is packaged for sale to the consumer in many ways, usually in cases containing 6, 12 or 24 bottles. The form of packaging employed varies depending on the sales area. In one such sales area, such cases are constructed of light cardboard and the empty bottles are returned by the consumer to the sale outlet in the cases. The returned bottles are refilled, but the cases are discarded.

In other sales areas, the case is constructed of heavy cardboard and is reutilized many times. However, the outer brand identifying material becomes dirty and possibly defaced

resistance. Cases constructed of cardboard material therefore suffer from drawbacks.

Cases constructed of polymeric materials have been suggested in view of the many useful properties of polymeric materials, such as, strength and wear resistance and hence long life; washability and lightness. As used herein the term "synthetic polymeric material" is utilized to refer to those synthetic polymeric materials which are capable of extrusion or molding to a formed article and does not include those polymeric substances which are incapable of or are otherwise unsuitable for the production of formed articles, such as cellulose nitrate.

Synthetic polymeric materials are commonly referred to as "plastics" and the latter term will be used in this specification in that sense.

Those plastic cases which have been proposed for the transportation and storage of beer bottles generally have upright side and end walls, which may have openings therein, a bottom wall and an open top. Dividers are usually provided within the container to separate the individual bottles from each other.

Such plastic cases have thick walls, so that the cases both when empty and when containing empty or full bottles may be stacked and the combined weight of the stack is supported by the walls through the height of the stack. Usually such cases are constructed in such a way that they may nest together when stacked.

In the handling of returned beer cases containing empty bottles, the bottles must be removed from the cases for washing and label removal prior to recycling for refill. The

is provided in which each layer is separated from the vertically adjacent layers by pallets. Generally, the cases in the stack are provided in a "cross-stacking" manner with the cases in one layer being stacked cross-wise with respect to those in the vertically adjacent layers. The cases are removed from the pallets and placed on a conveyor for feed as an in-line stream of cases to a debottling machine. At the debottling machine all of the bottles are removed from each case in turn.

10 In European practice bottles are removed from the cases directly from the stack. However, the cases in the stack must be positioned in a regular pattern in each layer with the pattern being repeated in each layer of the stack.

According to one aspect of the present invention, there is provided a bottle carrying case constructed of synthetic polymeric material comprising a bottom wall, side walls extending upwardly from the bottom wall, end walls extending upwardly from the bottom wall a distance substantially the distance of extension of the side walls, and an open top, divider means within the case dividing the space into a plurality of bottle receiving compartments of equal plan view cross-sectional dimension, the side walls and end walls extending upwardly a distance substantially equal to the height of bottles positioned in the individual compartments, the centre-to-centre distance between adjacent compartments in the plan view within the case and like cases abutting any side or end wall of the case being substantially equal.

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According to another aspect of the present invention, there is provided a stack of bottle carrying cases, each of the cases being constructed of synthetic polymeric material and comprising a bottom wall, non-load bearing side walls extending upwardly from the bottom wall, non-load bearing end walls extending upwardly from said bottom wall a distance substantially the distance of extension of said side walls, and an open-top,

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divider means within each of the cases dividing the space within each of the cases into a plurality of glass bottle containing compartments, the side walls and end walls of each of the cases extending upwardly from the bottom wall a distance substantially equal to the height of the bottles, each of the cases having sufficient strength to support a load of bottles positioned therein, the cases in the stack being positioned with bottles in vertically adjacent trays in vertical alignment and with the top of bottles in one case engaging the undersurface of the bottom wall of the vertically upwardly adjacent case, whereby the weight of the stack is sustained through the bottles, the cases in each layer of the stack being provided either perpendicular or parallel with respect to each other and the cases in vertically adjacent layers being provided either perpendicular or parallel with respect to each other, the rows of bottles in each case in each layer being colinear.

Usually the side walls and end walls of the tray are smooth and any reinforcing ribs utilized are positioned internally of the walls. Hand holes usually are provided in the end walls to assist in the carrying of the case.

The case of the present invention is unique in providing outer walls which are not load-bearing, other than the load-bearing capability required of the complete case when full of bottles, and in essence constitute a skin surrounding the internal dividers. Any load support required when full cases are stacked is provided by the bottles themselves. Since the bottles extend substantially the height of the side and end walls, and usually the caps of the bottles are slightly proud of the plane of termination of the outer walls, when cases containing bottles are stacked one on top of another the top of the bottles in a lower case engage the bottom wall of the next

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higher case. In this way support for the stack is provided through the bottles themselves rather than through the side and end walls of the case. This is in contrast to the prior art plastic cases described above wherein the outer walls are load supporting and when stacked the weight of the stack is supported by such side and end walls and not through the bottles contained in the cases. When the cases of the invention are empty they are sufficiently light that they may be readily stacked with the load of the stack being supported in this instance through the side and end walls.

The individual bottle-receiving compartments are constructed so that the centre-to-centre distance between adjacent compartments is substantially the same across the length and width of the case, and also when a plurality of cases are positioned in outer wall-to-outer wall abutting relationship, the centre-to-centre distance between compartments in adjacent cases is substantially the same as that within each case.

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Thus, in the pallet stacking and subsequent debottling operation the European practice of debottling directly from the stack may be utilized while the North American cross-stacking positioning may be used. Indeed, by utilizing cases in accordance with this invention, cases may be positioned in any desired random orientation on the individual pallets without reference to the orientation of cases in the next adjacent or any other layer in the stack provided, of course, that the cases are parallel or perpendicular to each other in each layer and in vertically adjacent layers. Additionally, by the use of such cases, it is possible to mix in any layer 24-bottle, 12-bottle or 6-bottle cases.

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The case in accordance with this preferred embodiment of the invention therefore allows the improved European debottling operation to be employed with a standard North American

stack, and also increases the versatility of the North American stacking operation in allowing cases of different sizes or the same size to be employed in random orientation in the layers of the stack.

The plastic beer cases of the present invention having particular utility in the beer case structure described and claimed in copending Canadian application Serial no. 143,948 filed June 6, 1972. As disclosed in that copending application, a bottle packaging structure includes a disposable sleeve closing the top of the case and surrounding and frictionally gripping the outer walls of the case. In another embodiment of the invention cases of this type are provided utilizing the cases of the present invention and the cases are dimensional so that the centre-to-centre distance between bottles within a case is substantially the same distance as the centre-to-centre distance between the bottles positioned in adjacent cases with the outer faces of the

sleeves of the adjacent cases in abutting relationship. In the specification references to face-to-face abutting relationship of adjacent cases is intended to refer not only to the abutting relationship of the cases themselves but also to abutting relationship of packaging structures including a sleeve, as disclosed in the copending application.

Further while the sleeve arrangement described in the copending application represents a preferred closure for the open top of the case, other closures may be employed. For example, a disposable light cardboard or paper sheet may be inserted in the top of the case to cover the bottles. Alternatively, openings may be provided in such a sheet coinciding with the position of the bottles, so that the bottle necks project through the openings.

The invention is described further by way of illustration with reference to the accompanying drawings, wherein:

Figure 1 is a perspective view of a plastic case in accordance with this invention, partially cut away;

20 Figure 2 is a plan view of a plurality of cases positioned in wall-to-wall abutting relationship,

Figure 3 is a detail of a modified form of Figure 2;

Figure 4 is a side elevation of a stack of cases the type shown in Figure 1;

Figure 5 is a section taken on lines 5-5 of Figure 4;

Figure 6 is a detail of a plurality of cases positioned as shown in Figure 2 with a differing form of bottle receiving compartment; and

Figure 7 is a close-up plan view of part of a bottle carrying case of the invention having yet another form of bottle receiving compartment.

In the drawings, referring to Figure 1, a plastic beer bottle carrying case 10 includes end walls 12 and side walls 14 extending upwardly from a bottom wall 16. The case 10 has an open top allowing access to the interior of the case.

The outer faces of the side walls 14 are smooth and reinforcing ribs are provided on the inner face of the side walls.

10 The outer faces of the end walls 12 also are smooth, and any required reinforcing ribs are positioned internally of these walls. Hand holes 18 are provided in the end walls 12 to aid in the carrying of the case 10.

The side walls 14 and end walls 12 extend upwardly from the bottom wall 16 a distance substantially equal to the height of a beer bottle 20 positioned in the case. The beer bottle 20 is placed in an individual compartment 22 defined by upright walls 24 which extend upwardly from the bottom wall 16. Usually the top of the beer bottle 20 extends slightly beyond the upper extremity of the side and end walls 14 and 12. The compartments 22 in the region immediately adjacent the side and end walls 12 and 14 are defined by the upright walls 24 and by part of the side or end walls.

The upright walls 24 may extend upwardly any desired distance, up to the height of the side and end walls 12 and 14, and separate the bottles 20 in the individual compartments 22 from each other. Any desired number of compartments 22 may be provided in the case 10, usually 6, 12 or 24.

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The compartments 22 as illustrated are defined by the upright walls 24 which engage the bottles 20 to position the bottles in the compartments 22. Any other convenient form of positioning of the bottles 20 in the compartments 22 may be employed, such as webs 26 (Figure 7) extending from the walls 24 into the compartments, or cylindrical sleeves substantially the size of the bottles fixedly positioned in the compartments 22. Also recesses 28 (Figure 6) in the bottom wall 16 at the base of each compartment 22 may be provided to receive the bottom of the beer bottle.

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The network of the compartments 22, the bottom wall 16, and the end and side walls 12 and 14 of the case 10 should be strong enough to sustain the load of all of the full bottles 20 in the case 10. However, the walls 12 and 14 do not sustain the load of a stack of cases, as will become more apparent below.

Turning now to consideration of Figure 2, there is illustrated a plurality of cases 10 positioned in face-to-face abutting relationship. Each of the cases 10 is of the type shown in Figure 1.

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The embodiment illustrated in Figure 2 may be modified as shown in Figure 3. In accordance with the structure described in the above-mentioned co-pending application Serial No. 143,948 surrounding each of the cases 10 is a disposable cardboard sleeve 30 which spaces the cases from each other. The outer faces of the sleeves 30 abut each other.

As may be seen in Figure 2, the centers of the bottles 20 in each compartment 22 in each case 10 are positioned the same distance apart whether distances within the same case 10 or

between adjacent cases 10, is considered. Thus, the distances d all are substantially equal.

Similarly, in Figure 3, the centers of the bottles 20 in each compartment in each case 10 is positioned the same distance apart, and in this embodiment the distances d1 are substantially equal. To compensate for the thickness of the sleeve 30 in the embodiment of the Figure 3, the thickness of the walls are varied as compared to the embodiment of Figure 2.

The bottle receiving compartments 22 in each of the 10 cases 10 may be of the same design or of varying design. The compartments 22 may have any of the forms discussed above, and may be the form shown in Figure 6 or 7. As illustrated in Figure 6, the distance d2 between bottle centers is substantially the same.

Therefore, for a plurality of cases constructed in accordance with this embodiment of the invention and all designed to receive the same size bottles, in a layer of cases positioned in abutting relationship and of random orientation or regular orientation, in which the cases are designed to receive differing numbers of bottles, for example 24, 12 or 6, or all of the cases are designed to receive the same number of bottles, and in which the cases have differing design of individual bottle-receiving compartments or the same design of such compartments, the centre-to-centre distance between individual bottle receiving compartments throughout the length and width of the layer is substantially the same. This unique construction results in an improved debottling operation, as described in more detail above.

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As is seen in Figures 4 and 5, a stack 100 of cases 10 is provided on a pallet 102. The load of the cases 10 is supported through the bottles 20 throughout the height of the stack, as may be seen in more detail in Figure 5. The bottles normally are glass, although other load supporting construction materials may be employed. As illustrated, the stack 100 may include cases provided in random orientation within each layer and between the layers when the cases have the preferred construction described above with reference to Figure 2 or 3.

10 Modifications are possible within the scope of the invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A bottle carrying case constructed of synthetic polymeric material comprising a bottom wall, side walls extending upwardly from said bottom wall, end walls extending upwardly from said bottom wall a distance substantially the distance of extension of said side walls, and an open top, divider means within said case dividing the space into a plurality of bottle receiving compartments of equal plan view cross-sectional dimension, the side walls and end walls extending upwardly a distance substantially equal to the height of bottles positioned in said individual compartments, the centre-to-centre distance between adjacent compartments in the plan view within the case and like cases abutting any side or end wall of the case being substantially equal.
2. The case of claim 1 wherein each of said side and end walls has a substantially smooth outer face.
3. The case of claim 1 wherein an outer sleeve is provided in engagement with the outer walls of said case and the outer faces of sleeves on adjacent cases abut each other when said centre-to-centre distance is measured.
4. A stack of bottle carrying cases, each of said cases being constructed of synthetic polymeric material and comprising a bottom wall, non-load bearing side walls extending upwardly from said bottom wall, non-load bearing end walls extending upwardly from said bottom wall a distance substantially the distance of extension of said side walls, and an open-top, divider means within each of said cases dividing the space within each of said cases into a plurality of glass bottle containing compartments, the side walls and end walls of each of said cases

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extending upwardly from said bottom wall a distance substantially equal to the height of said bottles, each of said cases having sufficient strength to support a load of bottles positioned therein, said cases in said stack being positioned with bottles in vertically adjacent trays in vertical alignment and with the top of bottles in one case engaging the undersurface of the bottom wall of the vertically upwardly adjacent case, whereby the weight of said stack is sustained through said bottles, said cases in each layer of the stack being provided either perpendicular or parallel with respect to each other and said cases in vertically adjacent layers being provided either perpendicular or parallel with respect to each other, the rows of bottles in each case in each layer being colinear.

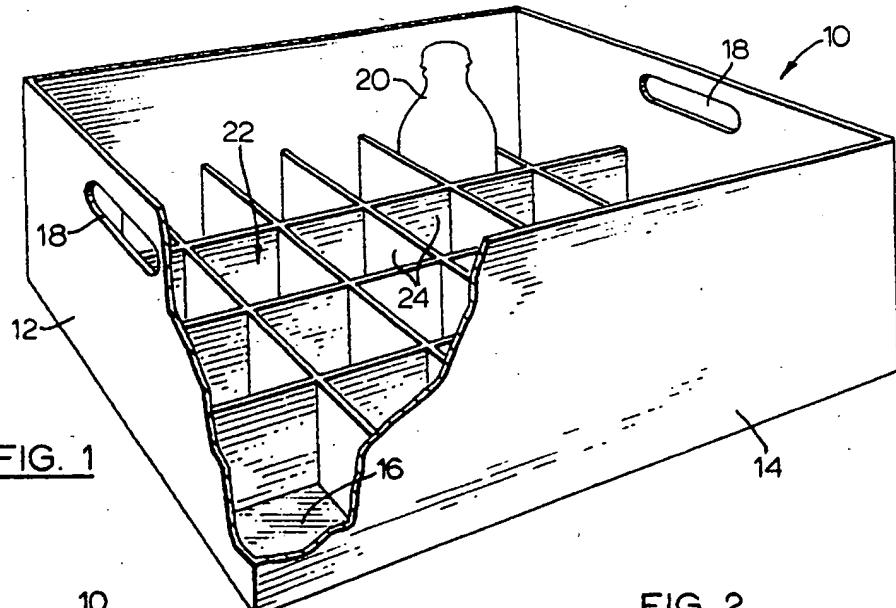


FIG. 1

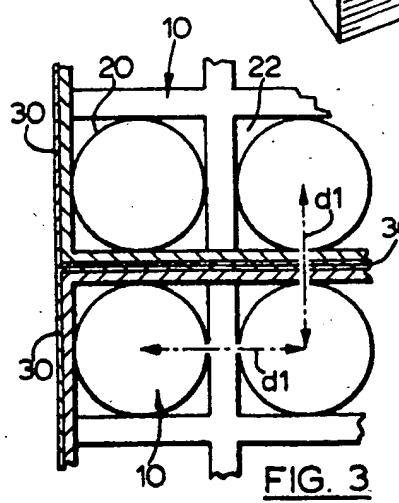


FIG. 3

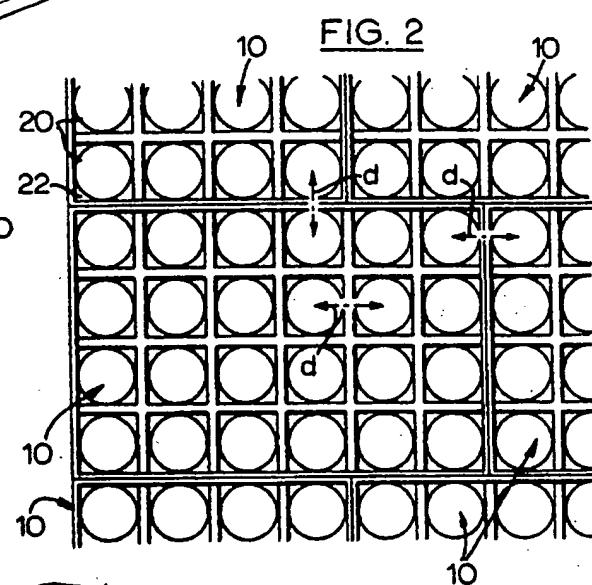


FIG. 2

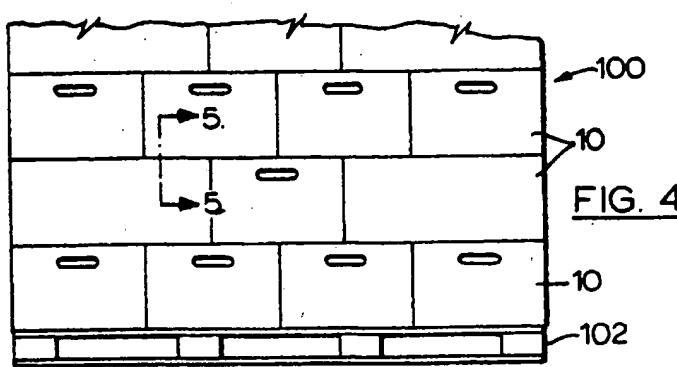


FIG. 4

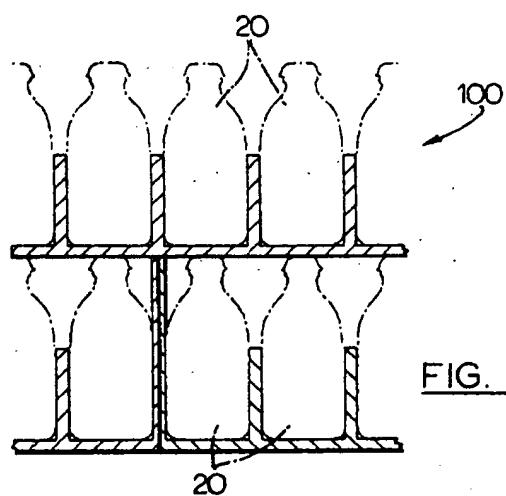


FIG. 5

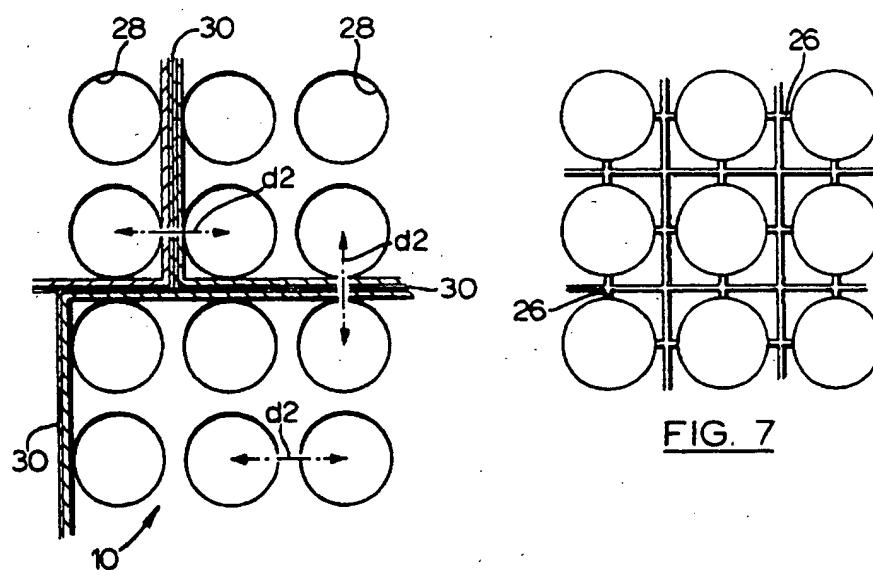


FIG. 6

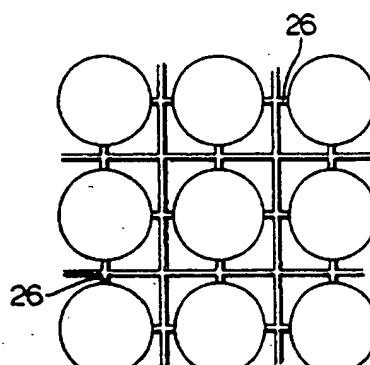


FIG. 7

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